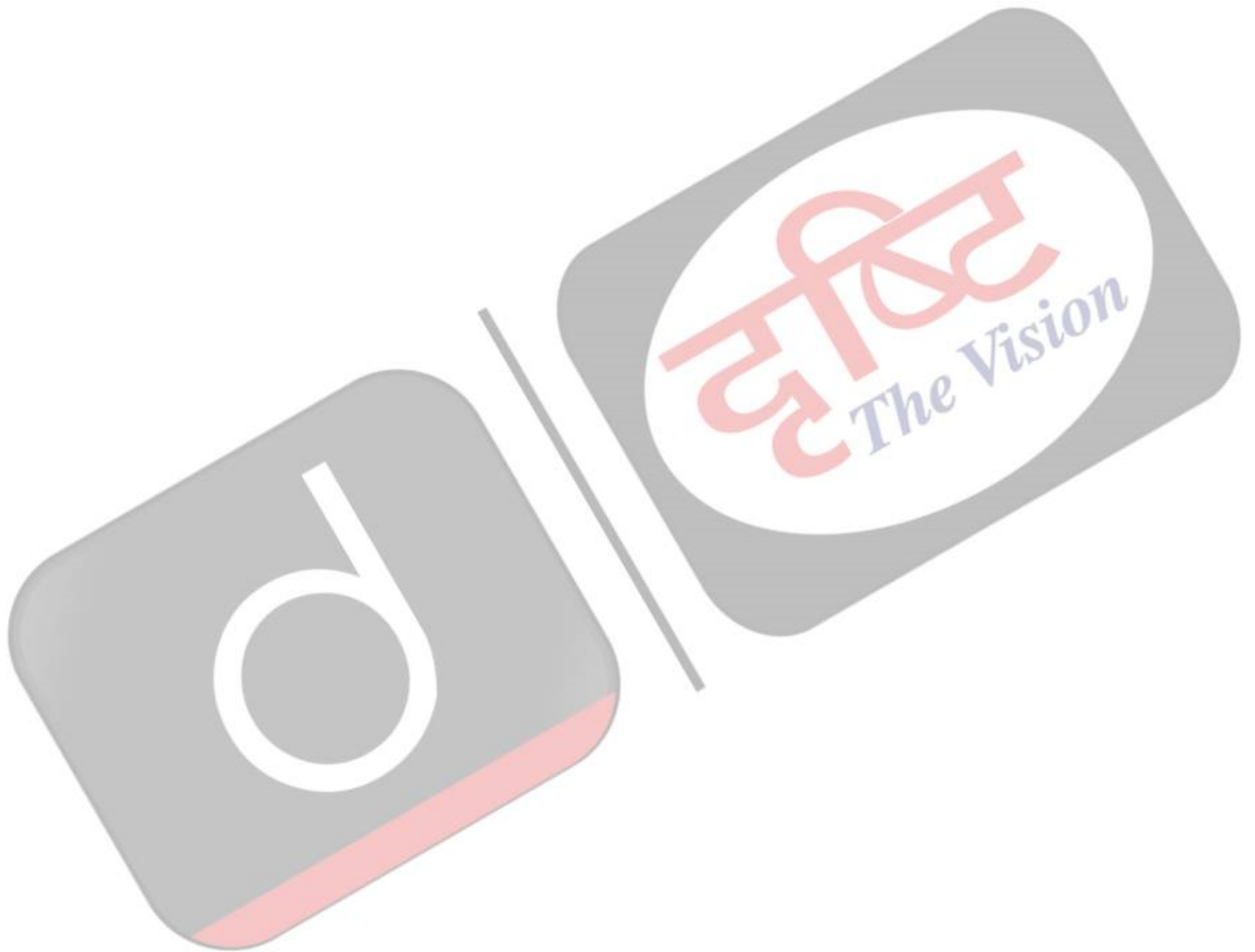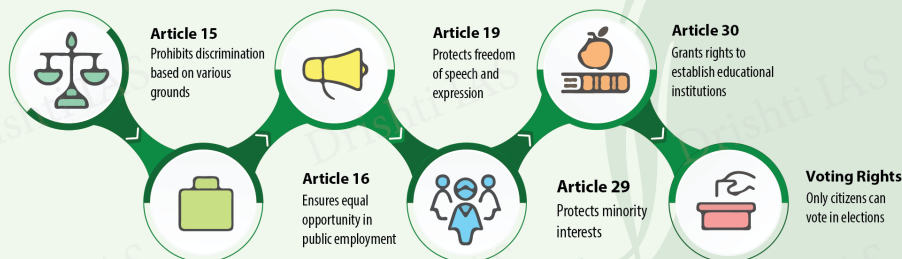# Citizenship

Citizenship

Citizenship is the legal recognition of an individual as a member of a state, granting rights and privileges, and requiring allegiance. In India, it defines who holds these rights and follows citizenship laws.

Constitutional Provisions Related to Citizenship

Articles 5 to 11 of the Indian Constitution deal with citizenship provisions, specifically outlining who became citizens at the commencement of the Constitution (**January 26, 1950).**

Article 5 — Citizenship at the commencement of the Constitution

Article 6 — Rights of citizenship of certain persons who have migrated to India from Pakistan

Article 7 — Rights of citizenship of certain migrants to Pakistan

Article 8 — Rights of citizenship of certain Persons of Indian Origin residing outside India

Article 9 — Persons voluntarily acquiring citizenship of a foreign State not to be citizens

Article 10 — Continuance of the rights of citizenship

Article 11 — Parliament to regulate the right of citizenship by law

Rights Available Only to Citizens of India

Article 15 — Prohibits discrimination based on various grounds

Article 16 — Ensures equal opportunity in public employment

Article 19 — Protects freedom of speech and expression

Article 29 — Protects minority interests

Article 30 — Grants rights to establish educational institutions

Voting Rights — Only citizens can vote in elections

Citizenship Act, 1955

- **Acquisition and Loss:** This Act outlines:

  - Ways to acquire Indian citizenship:
    - Birth
    - Descent
    - Registration
    - Naturalization
    - Incorporation of territory

  - Conditions under which citizenship can be lost:
    - Renunciation
    - Termination
    - Deprivation

- **Amended 6 Times (since 1986):** 1986, 1992, 2003, 2005, 2015, and 2019

Citizenship Amendment Act, 2019:

- **Eligibility:** Grants citizenship to six communities (Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians) from **Pakistan, Afghanistan, and Bangladesh** who entered India on or before **31st December 2014.**

- **Exemptions from Legal Punishments:** The Act exempts these communities from prosecution under the **Foreigners Act, 1946** and the **Passport Act, 1920** for illegal entry or overstaying in India, thereby providing them with a pathway to **citizenship without facing legal consequences.**

Socialist and Secular as Integral Part of Constitution

For Prelims: Supreme Court, Socialist, Secular, Basic Structure, 42nd Amendment, 1976, Preamble, Constituent Assembly, Representation of People Act, 1951, Freedom of Speech, Mixed Economy, Planned Economy, Liberalisation, Articles 25 and 26, Articles 25-28, Right to Life, Fundamental Rights, Directive Principles of State Policy (DPSP), Article 31C.

For Mains: Equitable Distribution of Resources, Significance of the terms socialist and secular in the Indian Constitution, Judicial interpretation related to terms socialist and secular.

Source: HT

Why in News?

Recently, the **Supreme Court** affirmed that **"socialist" and "secular"** are integral to the Constitution's **Basic Structure**, rejecting a petition to remove these terms from the Preamble.

- The Supreme Court upheld the **42nd Amendment, 1976** which introduced the terms **socialist and secular** saying that these terms hold **specific significance** in the Indian context, distinct from their **Western interpretations**.

What Arguments were Presented for Removal of Terms Socialist and Secular?

- **Rejection by Constituent Assembly:** On **15th November 1948**, **Professor KT Shah** proposed including **secular and socialist** in the **Preamble**, but the assembly **rejected** the proposal.
  - Further attempts to insert the term "**secular"** into **Article 18** of the Constitution were similarly **dismissed** by the **Constituent Assembly.**
- **Preamble's Amendment Date**: A petitioner claimed the inclusion of socialist and secular terms in the **42nd Constitutional Amendment Act, 1976** was unconstitutional because of the fixed adoption date of **26th November, 1949** and amendments were made in **1976** with **retrospective effect**.
  - However, the Court recognised the Constitution as a **living document** that **evolves with societal needs,** noting that the inclusion of socialist and secular reflects this evolution.
- **1989 Amendment to the Representation of People Act:** The petitioners challenged the **1989 amendment** to the **Representation of People Act (RPA), 1951** arguing that requiring political parties to pledge allegiance to **socialism and secularism** for registration infringes on their **freedom of speech** under **Article 19(1)(a)**.

How Western Concept of Secularism Different from Indian Concept?

Aspect	Western Concept of Secularism	Indian Concept of Secularism
Definition	Primarily refers to the **strict separation of religion from state affairs.**	**No strict separation** between state and religion. Emphasises **equal respect** for all religions and the **state's positive role** in

		promoting religious harmony. E.g., Temple entry and Criminalising **triple talaq**
Role of Religion	Religion is often seen as a **private matter**, and the state remains neutral.	The state **recognises and accommodates** multiple religions, promoting their coexistence.
Government's Obligation	The government has **no obligation** to endorse or support any religion.	The government is expected to **treat all religions equally** and ensure their fair respect in society.
Individualism Vs Collectivism	Focus on **individual rights** to practise religion freely without state interference.	Focus on **collective rights** of religious communities and ensuring their **cultural and religious practices** are protected.
Cultural Context	Often developed in societies with a history of **religious conflict**, emphasising neutrality.	Developed in a **pluralistic society** with a long history of coexistence among various religions.
Educational Institutions	Public schools are typically secular, **prohibiting religious instruction.**	Schools may **incorporate religious education**, reflecting the cultural diversity of the community.

How Western Concept of Socialism is Different from Indian Concept?

Aspect	Western Concept of Socialism	Indian Concept of Socialism
Main Focus	Advocates for **collective or government ownership** of the means of production to achieve economic equality.	Emphasises on **democratic socialism** though **equitable distribution of resources** while allowing for a **mixed economy** with both public and private sectors.
Economic Structure	It involves an imperative **planning** model where the state controls key industries, especially in **Marxist or Leninist** contexts.	It involves an **indicative planning model** where the **state** indicates areas of cooperation and the private **sector also plays a significant role** in achieving the targets**.**
Class Struggle	Focuses on the **conflict between classes** (proletariat vs. bourgeoisie) as a driver for social change and revolution. **Capitalists and socialists** consider **each other as their enemy**.	Emphasises **social justice and upliftment of marginalised communities** without necessarily advocating for class struggle.
Role of the State	The state often plays a central role in **economic planning and resource allocation**, especially in more radical forms of socialism.	The state has a **regulatory role** and implements **welfare schemes,** while encouraging private enterprise and **liberalisation.**
Cultural Context	Developed in response to **industrial capitalism** and **urbanisation** in the West, often rooted in **Marxist theory.**	Evolved from the context of **colonialism**, **independence**, and the need to address deep social inequalities and diverse cultural identities.
Globalization and Trade	May be **critical of globalisation**, viewing it as a form of **capitalist exploitation.**	Generally **supportive of globalisation**, recognizing the need for India to engage with global markets while ensuring social welfare.

DIRECTIVE PRINCIPLES OF STATE POLICY

DPSP in Part IV Article (36-51) of the Indian Constitution, draws inspiration from the Irish Constitution.

Article 37 DPSP are not justiciable, yet fundamental to governance.

Socialist Principles

- **Article 38:** Promote social order and minimise inequalities in income, status and opportunities (44th CA*)
- **Article 39:**
  - Right to adequate means of livelihood
  - Equitable distribution of resources
  - Prevention of concentration of wealth
  - Equal pay for equal work
  - Protection of the strength and health of the workers
  - Opportunities for development of children
  - Article 39A: Free legal aid to the poor (42nd CA)
- **Article 41:** Right to work, education and public assistance
- **Article 42:** Just and humane conditions of work and maternity relief
- **Article 43:** Wage and a decent standard of life to all workers
  - **Article 43A:** Participation of workers in the industries (42nd CA)
- **Article 47:** Raise the level of nutrition and improve public health

*CA = Constitutional Amendment

Gandhian Principles

- **Article 40:** Organise village panchayats
- **Article 43:** Promote cottage industries in rural areas
  - **Article 43B:** Cooperative societies (97th CA)
- **Article 46:** Educational & economic interests of SCs, STs and other weaker sections
- **Article 47:** Prohibit consumption of intoxicating drinks/drugs
- **Article 48:** Prohibit slaughter of cows, calves and cattle

Liberal-Intellectual Principles

- **Article 44:** Uniform Civil Code
- **Article 45:** Early childhood care & education for children (0-6 yrs) (86th CA)
- **Article 48:** Agriculture and animal husbandry
  - **Article 48A:** Protection of environment, forests and wildlife (42nd CA)
- **Article 49:** Protect every monument or place of historic interest
- **Article 50:** Separation of judiciary from executive
- **Article 51:** Establish international peace & security via honourable relations, laws & treaties and dispute settlement

Drishti IAS

What is the Role of Indian Judiciary in Shaping Secularism?

- ***Sardar Taheruddin Syedna Sahib Case 1962*:** The Supreme Court asserted that **Articles 25 and 26 (freedom of religion)** of the Constitution highlight the **secular nature** of Indian democracy.
- ***Kesavananda Bharati Case 1973*:** The Supreme Court held that **secularism** was a part of the **basic structure** of the Constitution.
  - The basic structure doctrine posits that certain **core elements** of the Indian Constitution have **intrinsic value** and cannot be altered or removed.
- ***SR Bommai Case, 1994*:** The Court stated that secularism signifies **equal treatment of all religions** and noted that the term secular, added to the **Preamble** by the 42nd Amendment Act, 1976 emphasises the fundamental rights protected under **Articles 25-28.**
- ***Ismail Faruqi Case, 1994*:** The Court held that any **property belonging to a religious community** could be **acquired** by the State if deemed necessary after paying **fair compensation** of the property.
- ***Aruna Roy Case, 2002*:** The Supreme Court of India held that the essence of secularism is **non-discrimination of people by the State** on the basis of religious differences.
  - The Court made a distinction between **religious instruction and religious education** or study of religion and said the **latter was permissible**, and indeed desirable, while the **former was banned.**
- ***Abhiram Singh Case, 2017*:** The Court held that secularism does not require the State to be **aloof from religion**; rather, it mandates **equal treatment for all religions.**
  - It acknowledged that religion and caste are **integral to society** and cannot be entirely separated from politics.
  - A **political candidate or their agent** cannot appeal to **religion**, race, caste, community, or language during elections, as it is considered a **corrupt practice (Section 123(3) of**

RPA).

What is the Role of Indian Judiciary in Shaping Socialism?

- *Kesavananda Bharati Case, 1973*: The Supreme Court ruled that **socialism** is a fundamental aspect of the Constitution's **basic structure**, reinforcing its role in promoting social justice and equality.
- *State of Karnataka vs Sri Ranganatha Reddy Case, 1977*: The Court emphasised that socialism must focus on **social good**, arguing that **nationalisation or acquisition** should aim for the **common good and equitable wealth distribution**.
- *Maneka Gandhi Case, 1978*: The judgement emphasised that the **right to life** includes the **right to live with dignity**, which is essential to the **socialist principle** of ensuring a **fair quality of life for all citizens.**
- *Minerva Mills Case, 1980*: The Supreme Court emphasised the need to harmonise **Fundamental Rights** with the **Directive Principles of State Policy (DPSP),** stating that the DPSP should guide state policies **to secure social and economic justice** in line **with socialist principles.**
- *Sanjeev Coke Manufacturing Company vs Bharat Coking Coal Ltd Case 1982*: The judgement framed **nationalisation** as a necessary step for reorganising the coal industry and **safeguarding resources vital for public welfare**.
  - It noted that even if there was a violation of **Article 14**, **Article 31C** would protect **legislation**.
  - **Article 31C** protects laws enacted to ensure the **"material resources of the community"** are distributed to serve the common good **(Article 39(b))** and that wealth and the means of production are **not "concentrated" to the "common detriment" (Article 39(c)).**

Conclusion

The Supreme Court's **affirmation of "socialist" and "secular"** as integral to the **Constitution's Basic Structure** reflects the judiciary's role in interpreting these concepts in the Indian context. The distinctions from Western interpretations highlight the **unique socio-cultural landscape of India**, emphasising **inclusivity, social justice, and equitable resource distribution.**

> *Drishti Mains Question:*
>
> How do terms socialist and secular in the Indian Constitution evolved over time and how do they differ from their Western interpretations?

UPSC Civil Services Examination Previous Year Questions (PYQ)

Prelims:

Q.What was the exact constitutional status of India on 26th January, 1950? (2021)

(a) A Democratic Republic

(b) A Sovereign Democratic Republic

(c) A Sovereign Secular Democratic Republic

(d) A Sovereign Socialist Secular Democratic Republic

Ans: (b)

Q. The Preamble to the Constitution of India is (2020)

(a) a part of the Constitution but has no legal effect

(b) not a part of the Constitution and has no legal effect either

(c) a part of the Constitution and has the same legal effect as any other part

(d) a part of the Constitution but has no legal effect independently of other parts

Ans: (d)

Q. Who among the following were the founders of the "Hind Mazdoor Sabha" established in 1948? (2018)

(a) B. Krishna Pillai, E.M.S. Namboodiripad and K.C. George

(b) Jayaprakash Narayan, Deen Dayal Upadhyay and M.N. Roy

(c) C.P. Ramaswamy Iyer, K. Kamaraj and Veeresalingam Pantulu

(d) Ashok Mehta, T.S. Ramanujam and G.G. Mehta

Ans: (d)

Q. Consider the following statements: (2010)

1. The "Bombay Manifesto" signed in 1936 openly opposed the preaching of socialist ideals.
2. It evoked support from a large section of the business community from all across India.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (a)

Mains:

Q. Discuss each adjective attached to the word 'Republic' in the 'Preamble'. Are they defendable in the present circumstances? **(2016)**

Copper Plates Discovered from Vijayanagara Kingdom

For Prelims: Vijayanagara Kingdom, Archaeological Survey of India (ASI), King Krishandevaraya, Hampi, World Heritage site by UNESCO, Hazara Rama temple, Ugra Narasimha idol.

Source: TH

Why in News?

Recently, a **collection of copper plate inscriptions** featuring two leaves from the **16th Century CE** was discovered at the **Sri Singeeswarar temple in Mappedu village**, Tiruvallur district of Tamil Nadu.

- The **two leaves of the copper plates** strung together **using a ring** featuring the **seal of the Vijayanagara Kingdom.**
- The inscription, donating a village to Brahmins by the Raja of Chandragiri, is written in **Sanskrit and the Nandinagari script.** It was engraved in 1513 during the reign of **King Krishnadevaraya.**

Who was King Krishandevaraya?

- **Reign of Krishnadevaraya:**
  - The **Kingdom of Vijayanagar** was ruled by **Krishnadevaraya from 1509 to 1529 AD.**
    - After Krishna Deva Raya, **Achyuta Raya** took over **in 1530**, followed by **Sada Siva Raya in 1542.**
  - He was known by **various titles**, including **"Kannadaraya" and "Kannada Rajya Ramaramana."**
  - He is regarded as one of the **greatest statesmen in Indian history** and is considered one of the most significant rulers of mediaeval South India.
- **Literary Contributions:**
  - He was an **eminent scholar** and **authored works** such as Madalasa Charita, Satyavedu Parinaya, Rasamanjari, **Jambavati Kalyana,** and **Amuktamalkyada.**
  - Fluent in multiple languages, he supported poets writing in **Sanskrit, Telugu, Tamil, and Kannada.**
- **Patronage of Learning and Literature:**
  - His court included the **Ashtadiggajas, eight prominent scholars**, among them **Allasani Peddana, known as the Andhra-kavitapitamaha**, famous for his

work **Manucharitamu**.
- Kannada poet **Thimmanna completed** the **Kannada Mahabharatha,** originally started by Kumara Vyasa, at Krishnadevaraya's request.
- **Other notable poets** patronised during his reign.
    - Kannada poet Mallanarya, author of **Veerasaivamrita and Bhavachintaratna.**
    - **Chatu Vittalanatha**, who wrote **Bhagvatha.**
    - **Timmanna Kavi**, is known for his eulogy **Krishnaraya Bharata.**
    - **Peddanna**, a Telugu poet, was **honoured for his proficiency in Telugu and Sanskrit.**
- **Cultural Development:**
    - Krishnadevaraya played a significant role in nurturing the **Carnatic musical tradition**.
    - He also **encouraged classical dance forms,** including **Bharatanatyam and Kuchipudi.**
- **Infrastructural Development:**
    - He is **credited with building some fine temples** and adding impressive **gopurams to many important south Indian temples.**
    - He also founded a suburban township near Vijayanagar called **Nagalapuram after his mother.**

What are the Key Facts of the Vijaynagar Empire?

- **Foundation and Duration of the Empire:**
    - The **Vijayanagara Empire** was established in the **Deccan region** from 1336 onwards, **founded by Harihara** (also known as Hakka) and his brother **Bukka Raya.**
        - They made **Hampi the capital city (declared a World Heritage site by UNESCO in 1986).**
        - Vijayanagar Empire was **ruled by four important dynasties** (Sangama, Saluva, Tuluva, Aravidu).
    - The empire **lasted from 1336 until around 1660,** although it faced a gradual decline in its final century following a devastating defeat by an alliance of deccan sultanates, leading to the capital being captured, looted, and destroyed.
- **Portuguese Relations:**
    - Around **1510, the Portuguese captured Goa,** which had been under the Sultan of Bijapur, with the support of Vijayanagara.
    - The **Portuguese supplied** the Vijayanagara Empire **with guns and Arabian horses**, while the **empire exported cotton, rice, sugar, spices, indigo, and wooden goods.**
- **Cultural and Architectural Flourishing:**
    - The empire is generally regarded as **reaching its zenith during the reign of Krishna Deva Raya,** who conquered territories east of the Deccan that were formerly part of Orissa.
    - Many of the empire's notable monuments, including the **Hazara Rama temple, Krishna temple, and Ugra Narasimha idol**, date back to his time.
    - Vijayanagara rulers promoted the construction of grand temples, such as the **Virupaksha Temple and Vittala Temple**, known for their intricate carvings and stunning architecture.
- **Dominance in Southern India:**
    - Over two centuries, the Vijayanagara Empire **dominated southern India** and was the strongest power in the Indian subcontinent during this period.
    - The empire **served as a defense against invasions from the Turkic Sultanates** of the Indo-Gangetic Plain.
- **Tussle with the Deccan Sultanates and Mughals:**
    - The foundation of the Vijayanagara Empire was partly in response to the **weakening of the Delhi Sultanate under Muhammad bin Tughlaq,** whose policies led to unrest in the Deccan.
        - His **attempt to shift his capital from Delhi to Daulatabad a**nd his harsh taxation policies caused revolts, contributing to the rise of independent regional states, including Vijayanagara.
    - The empire **frequently clashed with the Bahmani Sultanate**, which had emerged after the collapse of Tughlaq's control in the Deccan.

- Territorial conflicts with the Deccan Sultanates, particularly over the **Raichur Doab,** were driven by competition for strategic and economic resources rather than purely religious differences.
  - **Area of Rule under Vijayanagar:**
    - At its peak, the Empire covered a **vast area across southern India,** including parts of present-day Karnataka, Andhra Pradesh, Tamil Nadu, Kerala, and Telangana.
    - It **extended from the Krishna River in the north to the southernmost tip of the Indian Peninsula,** and from the Arabian Sea on the west to the Bay of Bengal on the east.
  - **Decline and Fall:**
    - In **1565, the Battle of Talikota (Battle of Rakkasagi–Tangadagi)** resulted in a decisive defeat for the Vijayanagara army by the allied Deccan sultanates.

Nayakas

- The **Nayakas were military commanders** who were granted land (amaram) by the king in return for maintaining troops and financial contributions.
- They held substantial autonomy in their territories, managing local administration and defense while remaining loyal to the central authority.
- The Nayakas were responsible for local governance, including **land distribution and tax collection, creating a feudal-like system.**
- Over time, some Nayakas gained significant power, leading to conflicts with the central authority, especially during the decline of the empire.

Drishti Mains Question:

 Discuss the socio-economic and cultural contributions of the Vijayanagara Empire to southern India. How did these contributions influence subsequent Indian history?

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. Where is the famous Virupaksha temple located? (2009)

(a) Bhadrachalam

(b) Chidambaram

(c) Hampi

(d) Srikalahasti

Ans: (c)

<u>***Mains:***</u>

Q. Krishnadeva Raya, the king of Vijayanagar, was not only an accomplished scholar himself but was also a great patron of learning and literature. Discuss. **(2016)**

Shift of Tech Giants Towards Nuclear Energy

For Prelims: Small Modular Reactors (SMRs), **Startup Oklo**, **Wind and Solar Energy**, **Carbon Footprints**, **Greenhouse Gas Emissions**, **Nuclear Power**, **Rural Electrification Corporation**, **Nuclear Power Corporation of India**, **Nuclear Fission**, **Bharat Small Modular Reactor**, **Uranium**, **Chernobyl Disaster (1986)**, **Fukushima Accident (2011)**, **Nuclear Waste**.

For Mains: Growing significance of nuclear energy for meeting energy needs and climate goals.

Source: TH

Why in News?

Recently, some **big tech companies** including **Google** signed agreements to **purchase nuclear energy** to meet rising electricity demands for **Artificial Intelligence** data centres.

Which Big Tech Companies Investing in Nuclear Energy?

- **Google**: Google has entered into a corporate agreement to purchase nuclear energy from multiple **Small Modular Reactors (SMRs)** being developed by **Kairos Power**.
    - It will provide **500 MW** of carbon-free power for development of **AI technologies**.
- **Microsoft**: Microsoft signed a 20-year power purchase agreement with **Constellation Energy** to restart the **Three Mile Island nuclear power plant** in the US.
    - It will provide approximately **835 MW of carbon-free energy**, supporting Microsoft's goal of becoming carbon negative.
- **Amazon**: Amazon has formed **three agreements** to support nuclear energy. It includes, partnership with **Energy Northwest** for **SMRs in Washington**, investing in **SMR** development with **X-energy**, and collaborating with **Dominion Energy in Virginia.**
- **OpenAI**: OpenAI CEO **Sam Altman** has backed the nuclear **startup Oklo**, aiming for operational status by 2027.
    - Altman also invested in **Helion,** a **nuclear fusion company**, in 2021.

Why Are Big Tech Companies Shifting to Nuclear Energy?

- **Increasing Energy Demands from AI**: The **Electric Power Research Institute (EPRI)**, a non-profit organisation, highlighted that **data centres' electricity consumption could more than double by 2030.**
    - Data centres, which are critical for AI operations, are projected to **consume up to 9% of the United States' electricity by 2030**, more than double their current usage.
- **Limitations of Renewable Energy**: Nuclear energy provides **continuous and carbon-free power** around the clock as AI companies scale their operations.
    - Renewable energy sources such as **wind** and **solar** are intermittent in nature.
- **Sustainability**: Major tech companies are increasingly focused on reducing their **carbon footprints** and achieving **sustainability goals.**
    - E.g., Google reported a **13% rise in global greenhouse gas emissions in 2023**, highlighting the challenges of balancing growth with sustainability.
- **Strategic Partnerships and Investments:** Tech giants are forging strategic partnerships with energy companies to invest in **nuclear power projects**.
    - E.g., Microsoft partnered with **Constellation Energy** to revitalise the Three Mile Island nuclear plant in the US for securing long-term carbon-free energy.
- **Potential for Economic Advantage**: Investing in nuclear power now enables tech firms to secure a **reliable energy source**, which will be increasingly **valuable** as energy **competition intensifies**.
- **Climate Change Concern**: Concerns about **climate change** and energy reliability make nuclear power **more appealing**, prompting tech companies to justify their investments in this sector.

What is the Nuclear Energy Scenario in India?

- India aims to **triple its nuclear power capacity to 22,480 MW by 2032**, with a goal of deriving **25%** of its electricity from **nuclear sources by 2050.**
- **REC (Rural Electrification Corporation)** plans to allocate **Rs 6 trillion** to renewable and nuclear projects by **2030**.
- **NTPC** is partnering with **NPCIL (Nuclear Power Corporation of India)** to form **Anushakti Vidhyut Nigam**, focusing on building and operating **nuclear power plants**.
- India plans to establish **10 new reactors** and collaborate with private players to explore SMRs and innovate in nuclear technologies.
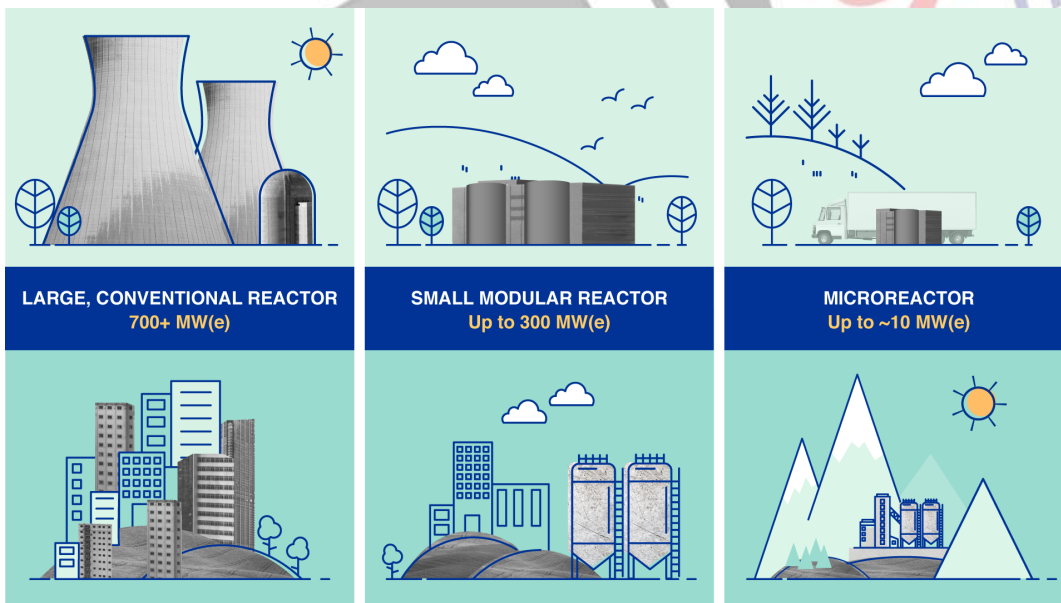
What are Key Points about Small Modular Reactors (SMRs)?

- **About**: SMRs are advanced nuclear reactors that are about **one-third the size** of traditional nuclear reactors.
    - **Small Size (S)**: Power capacity of up to **300 MW(e).**
    - **Modular (M)**: Components are **prefabricated and transported** to the installation site.
    - **Nuclear Reactors (R)**: Use **nuclear fission** to generate low-carbon electricity.
- **Advantages**:
    - **Smaller Footprint**: SMRs can be installed in locations **unsuitable for larger reactors.**
    - **Cost and Construction Efficiency**: Prefabrication and modular design **reduce construction time and costs.**
    - **Off-Grid Potential**: SMRs, especially **microreactors (up to 10 MW),** can provide power in remote areas.
    - **Reduced Refuelling Frequency**: SMRs may only need refuelling every **3 to 7 years,** with some designs lasting up to **30 years** without refuelling.
- **Global Adoption:** Russia's floating SMR power plant, the **Akademik Lomonosov**, began commercial operation in **2020**.
    - India aims to deploy 40-50 SMRs named **Bharat Small Modular Reactor** to replace captive thermal power plants
    - Other countries like **Argentina, Canada, China, South Korea, and the U.S.** are also advancing SMR projects.
    - More than **80 commercial SMR** designs are being developed globally for various applications, including **electricity generation, heating, water desalination, and**

industrial steam.

- **Challenges**: Although SMRs have a lower upfront capital cost per unit, their economic competitiveness **still needs to be proven in real-world deployments**.

Advantages of Small Modular Reactors

- Reduced Refuelling Frequency
- Smaller Footprint
- Off-Grid Potential
- Cost and Construction Efficiency

| LARGE, CONVENTIONAL REACTOR 700+ MW(e) | SMALL MODULAR REACTOR Up to 300 MW(e) | MICROREACTOR Up to ~10 MW(e) |

What are Advantages of Nuclear Energy?

- **Low-Carbon Solution**: Nuclear energy is a **reliable and consistent source** of power that is not affected by weather conditions, making it suitable for meeting energy demands continuously.
- **Small Land Footprint**: Nuclear facilities occupy **significantly less land** compared to other renewable energy sources.
    - A typical **1,000 MW nuclear plant requires only about one square mile**, whereas wind farms and solar plants need **360 and 75 times more land**, respectively.
- **High Power Output:** Nuclear power plants have a **high capacity factor**, producing maximum

output approximately **93%** of the time.

- **Minimal Waste Production**: Nuclear energy produces **relatively small amounts of waste** compared to other energy sources.
  - Advanced reactor designs are being developed that can utilise used fuel, potentially reducing waste even further.

What Concerns are Associated with Nuclear Energy?

- **Carbon Dioxide Emissions:** Nuclear power reactors themselves do not produce direct carbon dioxide emissions during operation but the processes of **mining and refining uranium ore**, as well as constructing nuclear power plants, require significant energy sourced from fossil fuels.
- **Reputation Issues**: Nuclear energy is often linked to **nuclear weapons**, which contributes to public fears about **proliferation and security risks**.
- **Safety Concerns:** High-profile accidents, such as **Three Mile Island Incident (1979)**, **Chernobyl Disaster (1986)** and **Fukushima Accident (2011)** have instilled fear about the safety of nuclear power plants, leading to widespread scepticism about their safety.
  - Environmental groups, such as **'Friends of the Earth,'** have criticised nuclear energy highlighting issues like **accidents, radioactive leaks,** and the challenges of **nuclear waste management.**
- **Cost and Financial Viability**: Nuclear power is often associated with **high initial construction and operational costs**, making it less appealing compared to alternative energy sources.

Way Forward

- **Enhancing Safety Protocols**: Adopt advanced reactor designs, such as **Generation IV reactors and Small Modular Reactors (SMRs)**, which prioritise **safety and efficiency.**
- **Innovative Waste Management**: Invest in advanced **nuclear waste management** solutions, such as **deep geological storage**, which has been successfully implemented in countries like **Finland**.
- **Integration with Renewables**: Promote nuclear energy as a **complementary resource** to intermittent renewable sources, enhancing overall **grid stability and energy security.**
- **Regulatory Improvements**: Implement stringent regulatory frameworks and **international safety standards** to restore public confidence in nuclear facilities.

> *Drishti Mains Question:*
>
> Small Modular Reactors (SMRs) are being hailed as the future of nuclear energy for their adaptability and efficiency." Critically examine.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q.The function of heavy water in a nuclear reactor is to (2011)

(a) Slow down the speed of neutrons

(b) Increase the speed of neutrons

(c) Cool down the reactor

(d) Stop the nuclear reaction

Ans: (a)

Mains

Excluded Sports From Commonwealth Games 2026

Why in News?

In the **Commonwealth Games (CWG) 2026 Glasgow**, **six of the 12 sports** in which India won medals at the 2022 Commonwealth Games have been excluded**.**

- The games that are excluded are Badminton, cricket, hockey, squash, table tennis, and wrestling.
- India strongly protested the exclusion of key sports from the Glasgow Games, as they are **India's top-performing events.**

What are the Recent Developments Related to CWG 2026?

- **About:**
    - The **23rd edition** of the **Commonwealth Games** will be held in **Scotland** from **23rd July to 2nd August 2026**, marking a return to the city 12 years after the 2014 Games.
- **Excluded Games:**
    - **Hockey:**
        - Hockey has been **part of the CWG since 1998**, with **India ranked** as the **second-best** team in CWG history, securing six medals: one gold, four silver, and one bronze for both men's and women's teams.
        - In the **Birmingham 2022 edition**, the Indian men's team finished second, while the women's team earned a bronze.
    - **Wrestling:**
        - India has **historically excelled in wrestling**, with 114 medals to date, including 49 gold, 39 silver, and 26 bronze.
        - In the Birmingham CWG, the country won 12 medals in wrestling, including six gold.
    - **Badminton:**
        - India achieved **six medals in badminton at the Birmingham Games,** comprising three golds
    - **Table Tennis:**
        - **Introduced in the CWG in 2002**, India has won medals in table tennis at every edition, totaling 20 medals.
    - **Squash and Cricket:**
        - They were included at the **1998 CWG, in Kuala Lumpur (Malaysia).**
- **Reason for Exclusion:**
    - The exclusion of certain sports from the CWG 2026 is **due to budget limitations.**
    - **Victoria (Australia)**, withdrew from hosting due to high costs, and **Glasgow**, now hosting on a tight budget, has reduced the Games to four venues.

What are the Key Facts Related to CWG?

- It is a **quadrennial international multisport event** contested by athletes from the Commonwealth of Nations.
- It is managed by the **Commonwealth Games Federation (CGF).**
    - It is the organisation responsible for the **direction and control** of the **Commonwealth**

Games and Commonwealth Youth Games.
  ○ It is an organisation **headquartered and incorporated in the UK**, but working across **72 member nations and territories.**
- The **first Commonwealth Games** were held in **Hamilton, Ontario, Canada** in August **1930.**

Commonwealth

- The **Commonwealth of Nations is a group of 56 countries** composed mostly of **former British colonies.**
- It was **established by the London Declaration in 1949.**
- While members of the Commonwealth are predominantly located in **Africa, the Americas, Asia, and the Pacific,** with many of them **emerging economies**, the **three European members of the group are Cyprus, Malta, and the U.K.**
- The **developed nations** of the Commonwealth are **Australia, Canada, and New Zealand.**

New Airports Under RCS-UDAN

Source: PIB

Why in News?

Recently, the Prime Minister inaugurated three airports under the **Regional Connectivity Scheme (RCS-UDAN)** in **Rewa (Madhya Pradesh), Ambikapur (Chhattisgarh), and Saharanpur (Uttar Pradesh)**.

- These airports aim to enhance air travel accessibility and will soon commence flights, furthering the mission of improving infrastructure in underserved regions.

UDAN SCHEME

Ude   Desh   Ka   Aam   Naagrik

Ministry of Civil Aviation

2016

FEATURES:

- Connecting Small and Medium cities with big cities through air service

- Providing affordable, economically viable, and profitable air travel

- Extending financial incentives to selected airlines to encourage operations from unserved and under-served airports.

ABOUT:

- A Regional Connectivity Scheme (RCS)

- Launched in October 2016 and operational for a period of 10 years

- Formulated in Pursuance of the National Civil Aviation Policy (NCAP)-2016

- Udan **5.0** is the latest project.

BENEFITS:

- Democratisation of the Aviation Sector

- Employment Generation

- Boost to Tourism Sector

- Connecting smaller airports, special helicopters and sea plane routes.

• **Lifeline UDAN:**
Air transport of medical cargo and essential supplies across India at the time of the Covid-19.

• **Krishi UDAN:**
To assist farmers in transporting agricultural products

• **International UDAN:**
To connect India's smaller cities directly to some key foreign destinations.

What is the Regional Connectivity Scheme (RCS-UDAN)?

- **About: Ude Desh Ka Aam Naagrik (UDAN)** was launched as a **Regional Connectivity Scheme (RCS)** under the **Ministry of Civil Aviation** in 2016.
  - The scheme connects remote areas, promoting tourism and economic growth, and has facilitated over 144 lakh passenger travels in its seven years.
    - **It supports last-mile connectivity** and addresses unserved air routes.
  - The **first RCS-UDAN flight** was inaugurated by the Prime Minister in 2017, **connecting Shimla to Delhi.**
- **Versions of UDAN:**
  - **UDAN 1.0:** Awarded 128 flight routes to connect 70 airports (36 newly operational).
  - **UDAN 2.0:** Inclusion of **helipads for the first time.**
  - **UDAN 3.0:** Introduce seaplanes for water aerodromes, enhancing connectivity in the North-East Region.
  - **UDAN 4.0:** Focused on North-Eastern regions, hilly states, and islands, facilitating operations for helicopters and seaplanes.
  - **UDAN 5.0:** Prioritises Category-2 and Category-3 aircraft.
    - **UDAN 5.1:** Boosts **helicopter routes by increasing funding**, lowering airfare caps, and requiring one destination to be a priority area.
    - **UDAN 5.2:** Enhances last-mile connectivity with small aircraft, boosting tourism in remote areas.
    - **UDAN 5.3 and 5.4:** To operationalize previously discontinued routes, further enhancing point-to-point air connectivity.

Other Major Initiatives for Aviation Sector

- **National Civil Aviation Policy (NCAP):** The **NCAP** seeks to make flying affordable and accessible, foster civil aviation growth, promote tourism and employment, enhance regional connectivity through fiscal support and infrastructure, and improve business ease via deregulation and e-governance.
- **Open Sky Agreement:** The bilateral agreements between **two countries negotiating to provide rights for airlines** to offer international passenger and cargo services.
- **Digi Yatra for Seamless Travel:** This digital platform facilitates a contactless experience for air travellers, with features like facial recognition and paperless check-in.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q1. With reference to 'National Investment and Infrastructure Fund', which of the following statements is/are correct? (2017)

1. It is an organ of NITI Aayog.
2. It has a corpus of `4,00,000 crore at present.

Select the correct answer using the code given below:

(a) 1 only

(b) 2 only

(c) Both 1 and 2

Marine Heat Waves and Twilight Zone

Source: IE

Why in News?

Recently, in a study researchers investigated **Marine Heatwaves (MHWs)** and cold spells within the largely **underexplored twilight zone of the ocean.**

- A cold spell refers to a period of unusually cold weather, often lasting several days or longer.

Marine Heat Waves (MHWs)

- An MHW is an extreme weather event. It occurs when the **surface temperature** of a particular region of the **sea rises to 3 or 4 degree Celsius** above the **average temperature for at least five days.** MHWs can last for **weeks, months or even years.**
- These events are linked to **coral bleaching, seagrass** destruction, and loss of kelp forests, affecting the **fisheries sector** adversely.
- The most common drivers of marine heatwaves include **ocean currents which can build up areas of warm water** and air-sea heat flux or warming through the ocean surface from the atmosphere.
- Winds can enhance or suppress the warming in a marine heatwave, and **climate modes like El Niño** can change the likelihood of events occurring in certain regions.

What are Key Findings Related to MHWs?

- **Marine heatwaves (MHWs) occurring in the deep ocean** are under-reported.
  - To monitor temperature changes at great depths, **specialized buoys suspended in the ocean were deployed globally** for extended data collection.
  - **Argo floats,** robotic devices that can dive to 2,000 meters and resurface, were **used to gather crucial temperature and salinity data**.
- Global warming is affecting surface ocean temperatures, while the impact on deep ocean waters reveals the deeper, less understood consequences of climate change on oceanic ecosystems.
- Unlike surface-level marine heatwaves, **atmospheric factors do not influence temperature changes in the deep ocean**.
  - Instead, **eddy currents**, which are **large, swirling loops of water that can extend hundreds of kilometers** and reach depths over 1,000 meters, **play a crucial role** in transporting warm or cold water across vast distances.
  - The overall ocean warming is leading to stronger eddy currents, amplifying these extreme temperature changes.
- **MHW impact on Biodiversity:**
  - Extreme temperature shifts in the **twilight zone** are alarming due to the presence of many **fish species and plankton,** which are **vital to the oceanic food chain** and serve as a key food source for small fish.
  - MHW can **reduce oxygen levels and deplete nutrients in the water,** endangering

marine life and the balance of the ecosystem.

Twilight Zone in the Ocean

- The twilight zone, also known as the **mesopelagic or dysphotic zone**, is a layer of the ocean that extends from 200 to 1,000 meters below the ocean's surface.
- It is a vast **ecosystem inhabited by extraordinary creatures**, including **organisms that live in darkness** and those that migrate to and from the surface.
- It **plays a vital role in the ocean's ability to absorb and store carbon dioxide** from the atmosphere. This region also hosts the largest animal migration on Earth.
- Organisms in the twilight zone have adapted in several ways, including **bioluminescence** (used for camouflage) and **large mouths (**help maximize rare encounters with prey in the dark).

Eddy Currents

- An eddy current in the ocean is a **small, circular water current that detaches from the main current** and **moves independently.**
    - They are **formed when segments of a current pinch off,** similar to small whirlpools seen in rivers while canoeing.
- Eddies can **span hundreds of kilometers and extend to depths** exceeding 1,000 meters. They **can be detected from space using infrared sensors.**
- They are responsible for several developments.
    - Cold-core eddies trap nutrient-rich water and transport it along with plankton.
        - Eddies can create swirling patterns in **phytoplankton blooms.**
    - It can **displace warm surface water downward or lift cold water upward,** leading to rapid temperature changes.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. With reference to Ocean Mean Temperature (OMT), which of the following statements is/are correct? (2020)

1. OMT is measured up to a depth of 26ºC isotherm which is 129 meters in the south-western Indian Ocean during January-March.
2. OMT collected during January-March can be used in assessing whether the amount of rainfall in monsoon will be less or more than a certain long term mean.

Select the correct answer using the code given below:

(a) 1 only

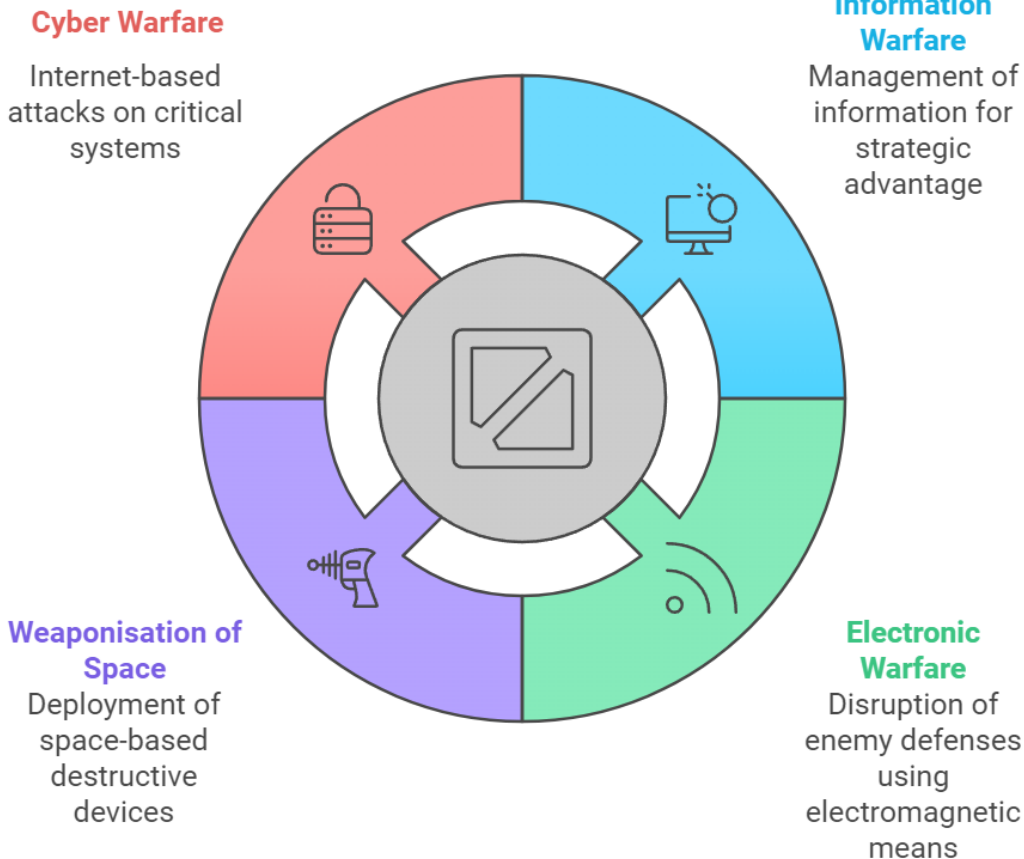**(b)** 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (b)

Hybrid and Non-Kinetic Warfare

Recently, the **Parliamentary Standing Committee on Defence (PSCoD)** has emphasised on the Indian armed forces' preparedness for **hybrid warfare**.

- **Hybrid warfare** refers to a combination of **conventional military tactics** (kinetic warfare) and modern strategies such as **cyber warfare,** **information manipulation, economic disruption, and psychological operations** (non-kinetic warfare).
  - Non-kinetic methods could be **deadlier** than traditional warfare e.g., **pager blasts in Lebanon.**
  - **Non-kinetic warfare** includes using **jamming, lasers, or electromagnetic waves** to disrupt drone operations instead of physically shooting down drones (Kinetic warfare).
- The tri-services **"future warfare"** course is designed to train officers from **Major Generals to Majors (and their equivalents)** in modern warfare techniques, both kinetic and non-kinetic.
  - It was recently conducted by the **Headquarters Integrated Defence Staff**.
- The Indian Army is observing **2024** as the **Year of Technology Absorption**, focusing on integrating disruptive technologies like **AI, hypersonic weapons, biotechnology, and quantum technology** into existing legacy systems.
- PSCoD is a **Departmentally-Related Standing Committees (DRSCs)** and functions under **Lok Sabha.**
  - The committee has **31 members—21 from Lok Sabha and 10 from Rajya Sabha**. Lok Sabha members are nominated by the **Speaker**, and Rajya Sabha members by the **Chairman**.

Emerging Warfare Strategies

Cyber Warfare
Internet-based attacks on critical systems

Information Warfare
Management of information for strategic advantage

Weaponisation of Space
Deployment of space-based destructive devices

Electronic Warfare
Disruption of enemy defenses using electromagnetic means

Read More: Technological Penetration in Indian Army

13th Major Port of Galathea Bay

The mega **International Container Transshipment Port (ICTP) at Galathea Bay**, located on **Great Nicobar Island** in the **Bay of Bengal,** has been officially designated as the **13th major port in India**. **Kamarajar Port** located on the **Coromandel Coast (Chennai)** was named the country's **12th major port.**

- **About ICTP at Galathea Bay:**
    - **Strategic Location:** The ICTP is along the **East-West international trade and shipping route,** close to key transshipment hubs such as **Singapore, Klang, and Colombo.** This location enhances its **importance within global trade networks.**
        - Located **just 40 nautical miles from the Malacca Strait**, a key shipping **route handling 35% of global sea trade**, the port has strong potential as a major transshipment hub for cargo from India's east coast, Bangladesh, and Myanmar.
    - **Economic Advantage:** Currently, nearly **75% of India's transshipped cargo is handled at foreign ports**,the ICTP aims to **reduce this dependency.**
        - It could help Indian ports save an estimated **USD 200-220 million annually in transshipment charges**.
- **Great Nicobar Island:**
    - It is the southernmost and largest of the Nicobar Islands. **The Andaman and Nicobar Islands** consist of 836 islands, divided into two groups: the northern Andaman Islands and the southern Nicobar Islands, **separated by the 10° Channel.**

Read More: International Container Transhipment Port in Great Nicobar Island

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Exercise Naseem Al Bahr

Indo-Oman bilateral naval exercise **Naseem-Al-Bahr** was held **in Goa** from October 2024. **INS Trikand and Dornier Maritime Patrol Aircraft** participated with the **Royal Navy of Oman Vessel Al Seeb.**

- **About Naseem Al Bahr:** The first exercise was conducted in 1993. It is conducted in **two phases**.
    - **Harbour phase:** Professional interactions, including expert exchanges and planning meetings, along with sports fixtures and social events.
    - **Sea phase:** Gun firings at surface inflatable targets, close-range anti-aircraft firings, and **Replenishment at Sea Approaches (RASAPS)**.
- **Other Exercises between India and Oman:**
    - **Army exercise: Al Najah**
    - **Air Force exercise: Eastern Bridge.**
- **India and Oman:**
    - India is the **2nd largest market for Oman's crude oil exports** for the year 2022 after China.
    - **India is also the 4th largest market for Oman's non-oil exports** for the year 2022 after UAE, US and Saudi Arabia and 2nd largest source of its import after UAE.
    - India and Oman are currently engaged in **negotiations regarding a trade agreement.**

Read More: India-Oman Bilateral Meet
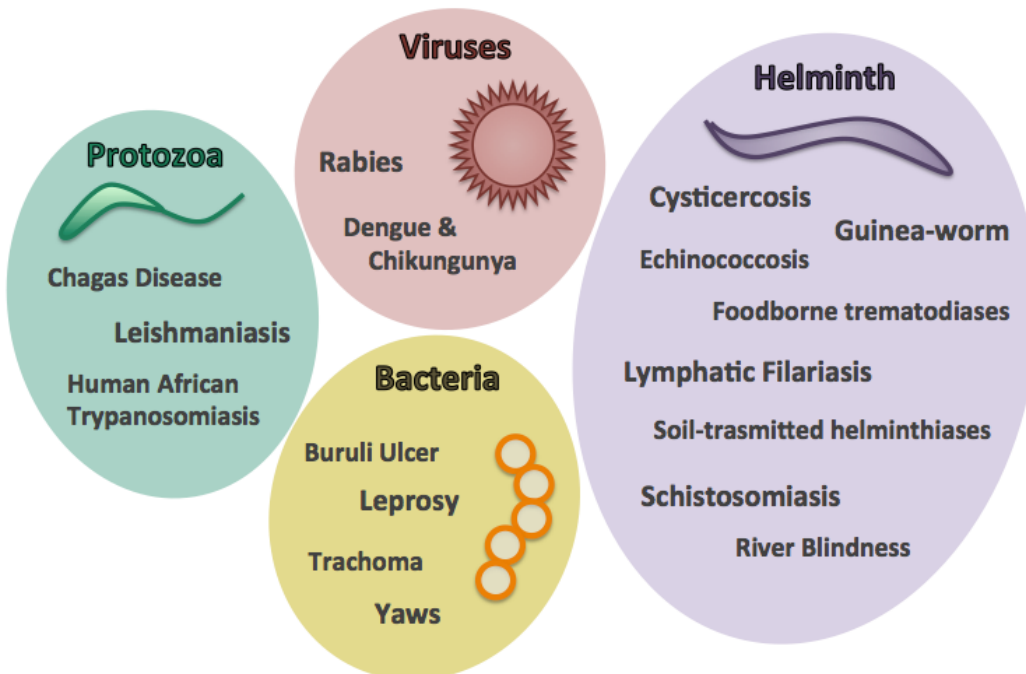

Eliminating Kala-azar

India is close to achieving the **elimination of Kala-azar** as a public health problem, meeting the **World Health Organization (WHO) certification criteria**.

- To receive WHO certification for eliminating kala-azar, a country must maintain **less than one case per 10,000 population** at the sub-district level for **three consecutive years**.
  - A country must demonstrate that **local transmission has been interrupted** for a set period and a system is in place to **prevent disease re-emergence**.
- India has achieved this for **two consecutive years** and needs to **maintain** this level for **one more year** to qualify for the certification.
  - With this, India can become the **2nd country** in the world after **Bangladesh** to eliminate Kala-azar.
- Kala-azar is the **second deadliest parasitic disease** after **malaria** in India.
- Kala-azar **(visceral leishmaniasis or Black fever)** is caused by a **protozoan parasite Leishmania donovani** and transmitted by the bite of an **infected female sandfly**.
  - If untreated, it is **fatal** in over **95%** of cases.
- **India** aimed to eliminate kala-azar by **2020**, while the **WHO** targets global elimination by **2030** as part of its **Neglected Tropical Disease roadmap**.

Neglected Tropical Diseases

Protozoa
Chagas Disease

Leishmaniasis

Human African Trypanosomiasis

Viruses
Rabies

Dengue & Chikungunya

Bacteria
Buruli Ulcer

Leprosy

Trachoma

Yaws

Helminth
Cysticercosis

Guinea-worm

Echinococcosis

Foodborne trematodiases

Lymphatic Filariasis

Soil-trasmitted helminthiases

Schistosomiasis

River Blindness

Read More: Global Report on Neglected Tropical Diseases